

***Remarks***

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-56 are pending in the application, with 1, 4, 13, 19, 26, 36, 45, and 49 being the independent claims. These claims have been identified as being allowable over the references of record.

A previously presented amendment to claim 16 is sought to be represented in a format that complies with the requirements of 37 C.F.R. § 1.173. This represented amendment is believed to introduce no new matter, and its entry is respectfully requested.

Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

***Objection Under 37 C.F.R. § 1.173(c)***

In the Office Action, the Examiner objected to a previously submitted amendment for failing to comply with the requirements set fourth in 37 C.F.R. § 1.173(c). In particular, the Examiner noted (1) that the Certificate of Correction change in claim 16 from "symmetrical" to "asymmetrical" was made with underlining and (2) that all the features of new independent claims 19, 26, 36, 45, and 49 must be shown to have specific support.

***Claim 16***

Claim 16 has been represented in order to comply with the requirements set forth in 37 C.F.R. § 1.173(c). As requested, the Certificate of Correction change in claim 16 from "symmetrical" to "asymmetrical" is shown without underlining. Reconsideration and withdrawal of the objection to claim 16 is respectfully requested.

***Support for Features of New Independent Claims 19, 26, 36, 45, and 49***

Specific support can be found in the specification for all features of new independent claims 19, 26, 36, 45, and 49. New claims 19, 26, 36, 45, and 49 are broadening independent claims. Independent claims 19, 26, 36, and 49 relate to radial bearings. Generally speaking, independent claims 19, 26, 36, and 49 have been broadened by eliminating the shaft element of independent claims 1, 4 and 13, and by reciting various features described in the specification for the bushing, foil, and/or underspring elements. Independent claim 45 relates to a radial bearing bushing as described in the specification. Specific support for new claims 19, 26, 36, 45, and 49 is found in the specification and drawings as noted below.

It is noted that the following information is provided in response to the Examiner's requirement to show how the specification supports each positively recited element in new independent claims 19, 26, 36, 45, and 49. This response should not in any way be construed to limit the full scope of these claims. The support is exemplary only and is not intended to limit the claims in any way.

New independent claim 19 recites:

19. A compliant foil fluid film radial bearing comprising:  
a bushing having an interior bore including a plurality of  
generally T-shaped retainers axially extending in said interior bore;  
a plurality of compliant foils, with an individual compliant  
foil disposed in said interior bore of said bushing between adjacent  
generally T-shaped retainers; and  
a plurality of foil undersprings, with an underspring  
disposed beneath each of said compliant foils between adjacent  
generally T-shaped retainers.

Specific support for the feature of "a bushing having an interior bore including a plurality of generally T shaped retainers axially extending in said interior bore" is found, for example, in the first feature of claim 1 and in FIGs. 1-4 (feature 12) and the description thereof.

Specific support for the feature of "a plurality of compliant foils, with an individual compliant foil disposed in said interior bore of said bushing between adjacent generally T shaped retainers" is found, for example, in the third feature of claim 1 and in FIGs. 1-4 (features 12, 16, 20, and 22) and the description thereof.

Specific support for the feature of "a plurality of foil undersprings, with an underspring disposed beneath each of said compliant foils between adjacent generally T shaped retainers" is found, for example, in the fourth feature of claim 1 and in FIGs. 1-4 (features 16, 18, and 22) and the description thereof.

New independent claim 26 recites:

26     A compliant foil fluid film radial bearing comprising:  
          a bushing having a cylindrical interior bore including a  
plurality of retainers axially extending into said interior bore;  
          a plurality of compliant foils, with an individual compliant  
foil disposed in said interior bore of said bushing between adjacent  
retainers; and  
          a plurality of foil undersprings, with an underspring  
disposed beneath each of said compliant foils between adjacent  
retainers, the radial height of said foil undersprings increasing from  
its leading edge to its trailing edge to establish a converging wedge  
of said compliant foil.

Specific support for the feature of "a bushing having a cylindrical interior bore including a plurality of retainers axially extending into said interior bore" is found, for example, in the first feature of claim 4 and in FIGs. 1-4 (features 20 and 22) and the description thereof.

Specific support for the feature of "a plurality of compliant foils, with an individual compliant foil disposed in said interior bore of said bushing between adjacent retainers" is found, for example, in the third feature of claim 4 and in FIGs. 1-4 (features 12, 16, 20 and 22) and the description thereof.

Specific support for the feature of "a plurality of foil undersprings, with an underspring disposed beneath each of said compliant foils between adjacent retainers, the radial height of said foil undersprings increasing from its leading edge to its trailing edge to establish a converging wedge of said compliant foil" is found, for example, in the fourth feature of claim 4 and in FIGs. 1-4 (features 16, 18, and 22) and the description thereof.

New independent claim 36 recites:

36. A compliant foil fluid radial bearing comprising:  
a bushing having a non-cylindrical interior bore including a  
plurality of retainers axially extending into said interior bore;  
a plurality of compliant foils, with an individual compliant  
foil disposed in said interior bore of said bushing between adjacent  
retainers; and  
a plurality of foil undersprings, with an underspring  
disposed beneath each of said compliant foils between adjacent  
retainers, the contour of the interior bore between adjacent  
retainers establishing a converging wedge on the surface of said  
compliant foil.

Specific support for the feature of "a bushing having a non-cylindrical interior bore including a plurality of retainers axially extending into said interior bore" is found, for example, in the first feature of claim 13 and in FIGs. 1-4 (features 12, 20, and 22) and the description thereof.

Specific support for the feature of "a plurality of compliant foils, with an individual compliant foil disposed in said interior bore of said bushing between adjacent retainers" is found, for example, in the third feature of claim 13 and in FIGs. 1-4 (features 16, 20, and 22) and the description thereof.

Specific support for the feature of "a plurality of foil undersprings, with an underspring disposed beneath each of said compliant foils between adjacent retainers, the contour of the interior bore between adjacent retainers establishing a converging wedge on the surface of said compliant foil" is found, for example, in the fourth feature of claim 13 and in FIGs. 1-4 (features 16, 18, and 22) and the description thereof.

New independent claim 45 recites:

45.    A radial bearing bushing comprising:  
          a bushing having an interior bore;  
          one or more retainer bases axially extending into the  
interior bore;  
          one or more leading edges attached to each of the one or  
more retainer bases for retaining a compliant foil; and  
          one or more trailing edges attached to each of the one or  
more retainer bases for retaining a compliant foil.

Specific support for the feature of "a bushing having an interior bore" is found, for example, in FIGs. 1-4 (features 12 and 20) and the description thereof.

Specific support for the feature of "one or more retainer bases axially extending into the interior bore" is found, for example, in FIGs. 1-4 (features 22 and 26) and the description thereof.

Specific support for the feature of "one or more leading edges attached to each of the one or more retainer bases for retaining a compliant foil" is found, for example, in FIGs. 1-4 (features 16, 22, 26, and 30) and the description thereof.

Specific support for the feature of "one or more trailing edges attached to each of the one or more retainer bases for retaining a compliant foil" is found, for example, in FIGs. 1-4 (features 16, 22, 26, and 28) and the description thereof.

New independent claim 49 recites:

49.     A compliant foil radial bearing comprising:  
          a bushing having an interior bore including one or more  
          retainer bases axially extending into the interior bore;  
          one or more compliant foils;  
          one or more leading edges attached to each of the one or  
          more retainer bases for retaining a compliant foil trailing edge;  
          one or more trailing edges attached to each of the one or  
          more retainer bases for retaining a compliant foil leading edge; and  
          one or more foil undersprings, each underspring disposed  
          beneath a compliant foil.

Specific support for the feature of "a bushing having an interior bore including one or more retainer bases axially extending into the interior bore" is found, for example, in FIGs. 1-4 (features 12, 20, 22, and 26) and the description thereof.

Specific support for the feature of "one or more compliant foils" is found, for example, in FIGs. 1-4 (feature 16) and the description thereof.

Specific support for the feature of "one or more leading edges attached to each of the one or more retainer bases for retaining a compliant foil trailing edge" is found, for example, in FIGs. 1-4 (features 16, 22, 26 and 30) and the description thereof.

Specific support for the feature of "one or more trailing edges attached to each of the one or more retainer bases for retaining a compliant foil leading edge" is found, for example, in FIGs. 1-4 (features 16, 22, 26, and 28) and the description thereof.

Specific support for the feature of "one or more foil undersprings, each underspring disposed beneath a compliant foil" is found, for example, in FIGs. 1-4 (features 16 and 18) and the description thereof.

As noted in the reply filed on November 18, 2003, new claims 20-25, 27-35, 37-44, 46-48, and 50-55 are dependent claims that further describe the claimed inventions of independent claims 19, 26, 36, 45, and 49. Support for these claims is also found throughout the specification and drawings. Claims 20 and 47 recite a cylindrical interior bore while claims 21 and 48 recite a non-cylindrical bore. As recited in the specification at column 2, lines 51-52, "the interior bore 20 of bushing 12 may or may not be cylindrical." Support for the hydrodynamic features of claims 22, 32, 41, and 52 and the hydrostatic features of claims 23, 33, 42, and 52 is found, for example, in the specification at column 4, lines 12-22, and in claims 10 and 12. Support for the cooling flow features recited in claims 24, 25, 34, 35, 43, 44, 46, 54, and 55 is found, for



example, in FIG. 2 and the description thereof and in claims 17 and 18. Support for the retainer features recited in claims 27-30 and 37-40 is found, for example, in FIGs. 1-3 and the descriptions thereof and claims 5-8. Support for the underspring, foil, and bore features recited in claims 31, 50, and 51 is found, for example, in FIGs. 1-4 and the descriptions thereof and in claims 2, 3, and 9.

As also noted in the reply filed on November 18, 2003, new claim 56 recites "said retainers are generally T-shaped retainers." Support for new claim 56 can be found, for example, in claim 5, FIGs. 1-3, and the written description for FIGs. 1-3 (see item 22). Claims 14-17 have been changed to depend from a new claim 56.

Reconsideration and withdrawal of the objection under 37 C.F.R. § 1.173(c) is respectfully requested.

### ***Conclusion***

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully  
requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Virgil L. Beaton  
Attorney for Applicant  
Registration No. 47,415

Date: 5/24/04

1100 New York Avenue, N.W.  
Washington, D.C. 20005-3934  
(202) 371-2600